

C. REMARKS/ARGUMENTS

1. Status of the Claims

Claims 1, 3, 4, 21, 22 and 24-26 are currently pending in the application. Claim 1 is independent. Claims 3, 4, 21, 22, and 24-26 depend on claim 1.

Applicant notes with appreciation that claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form. Applicant has not rewritten claim 4 in independent form, in the belief that claim 1, upon which claim 4 depends, is allowable, as discussed in full below.

2. Rejection of Claims 1, 3, 21, 22, and 26 Under 35 U.S.C. § 103

Claims 1, 3, 21, 22, and 26 stand rejected under 35 U.S.C. § 103 as being anticipated by U.S. Pat. No. 5,493,177 to Muller (henceforth "Muller 177"), in view of U.S. Pat. No. 6,441,451 to Ikeda (henceforth "Ikeda"). The Applicant respectfully traverses these rejections.

Applicant submits that, for the reasons discussed below, the Examiner's rejections do not establish a *prima facie* case of obviousness of independent claim 1, and of claims 3, 21, 22, and 26 depending therefrom, and therefore that there is no proper basis for a 35 USC 103 rejection of claims 1, 3, 21, 22, and 26. See MPEP 2142 ("The examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness.")

It is well known that, in order to establish a *prima facie* case of obviousness, a rejection must satisfy, *inter alia*, at least the following conditions:

- A) The prior art reference(s) must teach or suggest all of the elements and limitations recited in the claims; and
- B) There must be some suggestion, teaching, or motivation to combine the references on which the rejection is based.

See MPEP 2142.

Applicant submits that the Examiner's rejection of claims 1, 3, 21, 22, and 26

over Muller 177 in view of Ikeda satisfies none of the criteria above (neither A) nor B).

Claim 1

A. The Documents cited by the Examiner (Muller 177 and Ikeda), Either Alone or in Combination, Fail to Teach or Suggest All of the Elements Of Claims 1

Applicant submits that condition A) above is not satisfied, with respect to the 35 USC 103 rejection of amended claim 1, because the cited documents (Muller 177 and Ikeda), either alone or in combination, fail to teach or suggest all the limitations of amended claim 1. In other words, the combination of Muller 177 and Ikeda does not result in the invention claimed in claim 1, and therefore the combination of Muller and Ikeda is not a proper basis for an obviousness rejection of amended claim 1.

In particular, Applicant submits that Muller 177 fails to teach or suggest at least elements 2) and 4) below, and Ikeda fails to teach or suggest at least elements 1), 2), 3), and 4) below, and therefore that the combination of Muller 177 and Ikeda fails to teach or suggest at least elements 2) and 4) of independent claim 1, listed below:

- 1) *"forming one or more holes in said cap layer";*
- 2) *"introducing a dry plasma etchant into said interior region through said one or more holes";*
- 3) *"sealing said one or more holes in said cap layer with a seal layer*
- 4) *"thereby forming a sealed cavity that encapsulates said movable microstructure; said sealed cavity being defined by said seal layer and said planar support surface."*

Muller does not teach elements 2) and 4)

The Examiner has acknowledged that Muller 177 does not teach element 2) above. See Office Action, page 3, last line ("Muller does not teach using dry plasma to remove the sacrificial material").

Applicant further submits that, on the contrary, Muller 177 teaches away from the use of dry plasma etchant, by explicitly describing wet etching, i.e. describing *inter alia*

the use of phosphoric acid, the wet etching of the interior of the cavity, and the use of a potassium hydroxide solution (See e.g. Muller 177, Col. 9, lines 25-26, and 33-34 (*"The SixN is etched in phosphoric acid at 160 degrees C . . . The resulting pad 176 will form an etching channel for wet etching the interior of the cavity . . . "*, Col. 10, lines 34-38 (*"The etching channels 32 and the cavity . . . should be anisotropically etched in an 80 degree C potassium hydroxide (KOH) solution . . . "*)

Muller 177 also does not teach element 4) above. Contrary to the Examiner's statement on page 3, lines 22-23 of the Office Action, Fig.s 8K-1 and 8K-2 of Muller 177 do NOT show a sealed cavity defined by the seal layer 190 and the planar support surface 178,. Rather, in Fig.s 8K-1 and 8K-2 of Muller show the sealed cavity as being defined by the cap layer 186, and the support surface 178, NOT by the seal layer 190 and the support surface 178. In Muller 177, the seal layer 190 does not extend from the planar support surface, unlike in Applicant's invention (illustrated e.g. in FIG. 8A and FIG. 9B), in which the seal layer (shown with reference numeral 26 in FIG. 8A) contacts the support surface 4 and extends from points on the support surface 4, so that a sealed cavity can be defined by the seal layer 26 and the support surface 4, as required in claim 1. In Muller 177, the seal layer 190 is deposited on top of the cap layer 186, but does not contact the support surface 178, therefore the seal layer 190 and the support surface 178, by themselves, cannot define a sealed cavity. Rather, the sealed cavity is defined in Muller 177 by the cap layer 186 and the support surface 178.

Ikeda does not teach elements 1), 2), 3) and 4)

Ikeda does not teach elements 1), 3), and 4), because in Ikeda there is no teaching, suggestion, or mention of forming any holes in the cap layer, nor of sealing such holes in the cap layer with an additional seal layer, nor of forming a sealed cavity that is defined by this additional seal layer and the support surface. Limitations 1), 3), and 4) are thus completely absent in Ikeda. As seen e.g. from FIG.s 1(a) – 1(h), and from Ikeda Col. 5, line 33 – Col. 7, line 29, in Ikeda the cavity 141 is formed between the insulating layer 120 and the diaphragm layer 150. There is absolutely no mention of forming any holes in the diaphragm layer 150 (any such holes in the diaphragm layer

would make the pressure transducer of Ikeda inoperable for its intended purpose), nor of sealing such holes with an additional seal layer, nor of forming a sealed cavity defined by such an additional seal layer.

Ikeda also does not teach limitation 2), namely introducing a dry plasma etchant **through holes formed in the cap layer**.

On the contrary, Ikeda teaches away from limitation 2).

See Tec Air, Inc. v. Denso Mfg. Mich. Inc., 192 F.3d 1353, 1360, 52 USPQ2d 1294, 1298 (Fed. Cir. 1999): "A reference may be said to **teach away** when a person of ordinary skill, upon reading the reference, . . . would be led in a direction divergent from the path that was taken by the applicant." Also, a prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. W.L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert denied*, 469 US 851 (1984).

Applicant submits that Ikeda teaches away from limitation 2) above, because Ikeda teaches forming **holes in the bottom of the substrate**, not in the cap layer, and teaches introducing the dry plasma etchant **from the bottom, not from above**, i.e. not from holes formed in a cap layer. See e.g. FIG. 1(f) and 1(g) of Ikeda; see also Ikeda Col. 6, lines 46-48 and 56-60 ("**The through hole 190 is, . . . formed in the center of the bottom of the substrate 100** which extends vertically"; "The sacrificial layer 140 is removed, as shown in FIG. 1(g), isotropically in the dry etching by injecting gasses whose main component is oxygen excited by plasma **into the hole 190** . . . ")

Accordingly, Ikeda teaches away from the limitation 2) above, requiring introduction of dry plasma etchant through holes formed in the cap layer, by disclosing that dry plasma etchant be introduced through holes formed in the bottom of the substrate.

In sum, for the reasons explained above, Muller 177 fails to teach elements 2) and 4) above, and Ikeda fails to teach limitations 1), 2), 3), and 4) listed above. Accordingly, Applicant concludes that the proposed combination of Muller 177 and Ikeda does not teach at least elements 2) and 4) of claim 1. Therefore, the combination of Muller 177 and Ikeda does not result in Applicant's invention. The result of such a

combination would lack at least the following features of Applicant's invention as claimed in claim 1: a) introducing a dry plasma etchant through one or more holes formed in the cap layer; and b) forming a sealed cavity defined by a seal layer (that seals the holes formed in the cap layer) and the support surface.

Because the proposed combination of Muller 177 and Ikeda does not teach or suggest all the elements of claim 1, the proposed combination is not a proper basis for an obviousness rejection of claim 1.

B) There is no Suggestion, Teaching, or Motivation to Combine the Documents (Muller 177 and Ikeda) on which the Examiner's Rejection is Based, and Such a Combination would Improperly Change the Principle of Operation of Muller 177

Applicant submits that, not only does the proposed combination of Muller 177 and Ikeda fail to teach or suggest all the limitations of claim 1, but also there is no suggestion within the cited documents Muller 177 and Ikeda of any desirability of making such a combination, nor is there any teaching or motivation for such a combination.

It is well established that the Examiner must provide some suggestion of the desirability of doing what the inventor has done, without the benefit of impermissible hindsight. See MPEP 2142 and In Re San Su Lee, 277 F.3d at 1338: "*The initial burden is on the Examiner to provide some suggestion of the desirability of doing what the inventor has done.*" The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). See MPEP 2143.01.

It is also well established that, in order for a *prima facie* case of obviousness to be established, the teaching or suggestion to make the claimed combination must be found in the prior art itself, and not based on applicant's disclosure. In Re San Su Lee, 277 F.3d 1338 (CAFC 2002) ("*[T]he evidence of record must identify an objective source of the motivation to combine A with B in the manner proposed.*") See also MPEP §§ 2141 – 2142.

Applicant submits that nothing in Muller 177 suggests the desirability of using dry plasma etchant to remove the sacrificial layers. On the contrary, by explicitly describing wet etching, Muller 177 teaches away from the use of dry plasma etchant. See e.g. Muller 177, Col. 9, lines 25-26, and 33-34 (*"The Si_xN is etched in phosphoric acid at 160 degrees C . . . The resulting pad 176 will form an etching channel for wet etching the interior of the cavity"*; Col. 10, lines 34-38 (*"The etching channels 32 and the cavity . . . should be anisotropically etched in an 80 degree C potassium hydroxide (KOH) solution . . ."*)

As for Ikeda, nothing in Ikeda suggests the desirability of, or provides any motivation for, forming holes in a cap layer, introducing dry plasma etchant through the holes in the cap layer, and sealing such holes with a seal layer. As explained above, on the contrary Ikeda **teaches away** from such features. As well known, a reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. In Ikeda, no holes are formed in the cap layer, and no dry plasma etchant is introduced through such holes in the cap layer. On the contrary, Ikeda teaches away from the limitations in claim 1 requiring the forming of holes in the cap layer, and introduction of dry plasma etchant through the holes in the cap layer, by teaching that a throughhole be formed **below**, in the **bottom of the substrate**, and that the dry plasma etchant be introduced **from the bottom, through the hole in the substrate**. See e.g. FIG. 1(f) and 1(g) of Ikeda; see also Ikeda Col. 6, lines 46-48 and 56-60 (*"The through hole 190 is, . . . formed in the center of the bottom of the substrate 100 which extends vertically"*; *"The sacrificial layer 140 is removed, as shown in FIG. 1(g), isotropically in the dry etching by injecting gasses whose main component is oxygen excited by plasma into the hole 190 . . ."*)

The Examiner has therefore failed to meet his burden of providing some suggestion of the desirability of combining Muller 177 and Ikeda.

A basic tenet of an obviousness rejection is that the references must be viewed without the benefit of impermissible hindsight. MPEP 2141. Applicant submits that the Examiner used impermissible hindsight, in his 35 USC 103 rejection of claim 1 in view

of Muller 177 and Ikeda, by failing to consider the invention as a whole, by failing to consider the references as a whole, and by using Applicant's disclosure as a roadmap.

Applicant further notes that the proposed combination of Muller 177 and Ikeda in the manner suggested by the Examiner is improper and contrary to the precepts of MPEP 2143.01, which mandates that the proposed modification cannot change the principle of operation of a reference. The proposed combination (of Muller 177 and Ikeda) impermissibly changes the principle of operation of the device disclosed in Muller 177, from forming holes in the cap layer and introducing etchant through such holes in the cap layer (as disclosed in Muller 177), to forming a hole in the center of the bottom of the substrate and introducing etchant from the hole in the bottom (as disclosed in Ikeda).

For these reasons, not only is there a lack of an objective source of any motivation to combine Muller 177 with Ikeda, but also such a combination would be improper under MPEP 2143.01.

For all of the reasons discussed above, Applicant respectfully submits that the Examiner has failed to establish a *prima facie* case of obviousness, and that there is no proper basis for the 35 U.S.C. §103 rejection of independent claim 1 which is not rendered obvious by Muller 177 and Ikeda, either alone or in combination.

Applicant respectfully submits that independent claim 1 is allowable.

Claims 3, 21, 22 and 26

It is well known that "[i]f an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious." MPEP 2143.03; In re Fine, 837 F.2d 1071, 2 USPQ2s 1596 (Fed. Cir. 1988).

Claims 3, 21, 22 and 26 all depend on claim 1, and therefore include all the limitations of claim 1. For all the reasons discussed in section 2 above, claim 1 is nonobvious under 35 U.S.C. 103, over Muller 177 in view of Ikeda. Accordingly, it follows that claims 3, 21, 22, and 26 (all depending from claim 1) are also nonobvious under 35 U.S.C. 103.

For these reasons, it is submitted that there is no proper basis for the Section

103 rejection of claims 3, 21, 22, and 26 over Muller 177 in view of Ikeda, and that claims 3, 21, 22, and 26 are allowable.

3. Rejection of Claim 24 Under 35 U.S.C. § 103 (a)

Claim 24 stands rejected under 35 U.S.C. § 103 (a) as being unpatentable over Muller in view of Ikeda, and further in view of U.S. Pat. No. 5,573,679 to Mitchell et al. ("Mitchell"). Applicant respectfully traverses.

Mitchell relates to a capacitive microphone. There is no teaching, mention, suggestion, or disclosure in Mitchell of any sealed cavity (the cavity 30 in Mitchell is not sealed), nor is there any teaching, mention, suggestion, or disclosure in Mitchell of any sealed cavity that encapsulates any microstructure, movable or otherwise.

Applicant submits that claim 24, which depends on claim 1, is patentable for at least the same reasons (discussed in section 2 above) for which claim 1 is patentable.

It is well known that "[i]f an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious." MPEP 2143.03; In re Fine, 837 F.2d 1071, 2 USPQ2s 1596 (Fed. Cir. 1988).

Claim 24 depends on claim 1, and therefore includes all the limitations of claim 24. For all the reasons discussed in section 2 above, claim 1 is nonobvious under 35 U.S.C. 103. Accordingly, it follows that claim 24 (depending from claim 1) is also nonobvious under 35 U.S.C. 103.

4. Rejection of Claims 1, 3, 21, 22, 25, and 26 Under 35 U.S.C. § 103 (a)

Claims 1, 3, 21, 22, 25, and 26 stand rejected under 35 U.S.C. § 103 (a) as being unpatentable over U.S. Pat. No. 5,798,283 to Montegue ("Montegue") in view of Ikeda. Applicant respectfully traverses.

Applicant submits that, for the reasons discussed below, the Examiner's rejections do not establish a *prima facie* case of obviousness of independent claim 1, and of claims 3, 21, 22, and 26 depending therefrom, and therefore that there is no proper basis for a 35 USC 103 rejection of claims 1, 3, 21, 22, and 26. See MPEP 2142 ("The examiner bears the initial burden of factually supporting any *prima facie*

conclusion of obviousness. If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness.”)

It is well known that, in order to establish a *prima facie* case of obviousness, a rejection must satisfy, *inter alia*, at least the following conditions:

- A) The prior art reference(s) must teach or suggest all of the elements and limitations recited in the claims; and
- B) There must be some suggestion, teaching, or motivation to combine the references on which the rejection is based.

See MPEP 2142.

Applicant submits that the Examiner’s rejection of claims 1, 3, 21, 22, and 26 over Montegue in view of Ikeda satisfies none of the criteria above (neither A) nor B).

Claim 1

A. The Documents cited by the Examiner (Montegue and Ikeda), Either Alone or in Combination, Fail to Teach or Suggest All of the Elements Of Claims 1

Applicant submits that condition A) above is not satisfied, with respect to the 35 USC 103 rejection of amended claim 1, because the cited documents (Montegue and Ikeda), either alone or in combination, fail to teach or suggest all the limitations of amended claim 1. In other words, the combination of Montegue and Ikeda does not result in the invention claimed in claim 1, and therefore the combination of Montegue and Ikeda is not a proper basis for an obviousness rejection of amended claim 1.

In particular, Applicant submits that Montegue fails to teach or suggest at least elements 2), 3), and 4) below, and Ikeda fails to teach or suggest at least elements 1), 2), 3), and 4) below, and therefore that the combination of Montegue and Ikeda fails to teach or suggest at least elements 2), 3) and 4) of independent claim 1, listed below:

- 1) “*forming one or more holes in said cap layer*”;
- 2) “*introducing a dry plasma etchant into said interior region through said one or more holes*”;
- 3) “*sealing said one or more holes in said cap layer with a seal layer*”

4) *“thereby forming a sealed cavity that encapsulates said movable microstructure; said sealed cavity being defined by said seal layer and said planar support surface.”*

Montegue does not teach elements 2), 3) and 4)

The Examiner has acknowledged that Montegue does not teach element 2) above. See Office Action, page 7, line 6 (“Montegue does not teach using dry plasma to remove the sacrificial material”). Applicant further submits that, on the contrary, Montegue teaches away from the use of dry plasma etchant, by explicitly describing wet etching. See e.g. Montegue Col. 8, lines 62-67 (“FIG. 12 shows the substrate with integrated MEM devices and electronic circuitry after a **wet etching** step in which the sacrificial material . . . is removed at least in part by a chemical etchant (e.g. buffered HF). The etchant composition is selected to dissolve the sacrificial material but no to affect other materials”)

Montegue also does not teach element 3) and 4) above. Contrary to the Examiner’s statement on page 7, lines 1-3 of the Office Action, Fig. 13 of Montegue does NOT show any seal layer 50. The item described with reference numeral 50 is merely a plug that just fills up the etching hole – it is NOT a layer . In particular, it is NOT a seal layer that encapsulates the movable microstructure, and defines a sealed cavity with the planar support surface. Fig. 13 clearly shows that there is no way the plug 50 and the support surface 14, by themselves, could ever be viewed as defining a sealed cavity that encloses a movable microstructure. Rather, the sealed cavity is defined in Montague by the cap layer 34 (sealed with a plug 50, which is NOT a seal layer that together with the support surface defines a sealed cavity) and the support surface 22.

Ikeda does not teach elements 1), 2), 3) and 4)

Ikeda does not teach elements 1), 3), and 4), as explained in detail previously. In Ikeda there is no teaching, suggestion, or mention of forming any holes in the cap layer, nor of sealing such holes in the cap layer with an additional seal layer, nor of

forming a sealed cavity that is defined by this additional seal layer and the support surface. Limitations 1), 3), and 4) are thus completely absent in Ikeda. As seen e.g. from FIG.s 1(a) – 1(h), and from Ikeda Col. 5, line 33 – Col. 7, line 29, in Ikeda the cavity 141 is formed between the insulating layer 120 and the diaphragm layer 150. There is absolutely no mention of forming any holes in the diaphragm layer 150 (any such holes in the diaphragm layer would make the pressure transducer of Ikeda inoperable for its intended purpose), nor of sealing such holes with an additional seal layer, nor of forming a sealed cavity defined by such an additional seal layer.

Ikeda also does not teach limitation 2), namely introducing a dry plasma etchant through holes formed in the cap layer

On the contrary, Ikeda teaches away from limitation 2).

See Tec Air, Inc. v. Denso Mfg. Mich. Inc., 192 F.3d 1353, 1360, 52 USPQ2d 1294, 1298 (Fed. Cir. 1999): “A reference may be said to **teach away** when a person of ordinary skill, upon reading the reference, . . . would be led in a direction divergent from the path that was taken by the applicant.” Also, a prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. W.L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert denied*, 469 US 851 (1984).

Applicant submits that Ikeda teaches away from limitation 2) above, because Ikeda teaches forming **holes in the substrate**, not in the cap layer, and teaches introducing the dry plasma etchant **from the bottom**, not from above, i.e. not from holes formed in a cap layer. See e.g. FIG. 1(f) and 1(g) of Ikeda; see also Ikeda Col. 6, lines 46-48 and 56-60 (“**The through hole 190 is, . . . formed in the center of the bottom of the substrate 100 which extends vertically**”; “The sacrificial layer 140 is removed, as shown in FIG. 1(g), isotropically in the dry etching by injecting gasses whose main component is oxygen excited by plasma **into the hole 190 . . .**”)

Accordingly, Ikeda teaches away from the limitation 2) above, requiring introduction of dry plasma etchant through holes formed in the cap layer, by disclosing that dry plasma etchant be introduced through holes formed in the substrate.

In sum, for the reasons explained above, Montague fails to teach elements 2), 3)

and 4) above, and Ikeda fails to teach limitations 1), 2), 3), and 4) listed above.

Accordingly, Applicant concludes that the proposed combination of Montegue and Ikeda does not teach at least elements 2), 3) and 4) of claim 1. Therefore, the combination of Montegue and Ikeda does not result in Applicant's invention. The result of such a combination would lack at least the following features of Applicant's invention as claimed in claim 1: a) introducing a dry plasma etchant through one or more holes formed in the cap layer; b) sealing the holes in the cap layer with a seal layer; and c) forming a sealed cavity that encloses the movable microstructure and that is defined by the seal layer the support surface.

Because the proposed combination of Montegue and Ikeda does not teach or suggest all the elements of claim 1, the proposed combination is not a proper basis for an obviousness rejection of claim 1.

B) There is no Suggestion, Teaching, or Motivation to Combine the Documents (Montegue and Ikeda) on which the Examiner's Rejection is Based,

Applicant submits that, not only does the proposed combination of Montegue and Ikeda fail to teach or suggest all the limitations of claim 1, but also there is no suggestion within the cited documents Montegue and Ikeda of any desirability of making such a combination, nor is there any teaching or motivation for such a combination.

It is well established that the Examiner must provide some suggestion of the desirability of doing what the inventor has done, without the benefit of impermissible hindsight. See MPEP 2142 and In Re San Su Lee, 277 F.3d at 1338: "*The initial burden is on the Examiner to provide some suggestion of the desirability of doing what the inventor has done.*" The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). See MPEP 2143.01.

It is also well established that, in order for a *prima facie* case of obviousness to be established, the teaching or suggestion to make the claimed combination must be

found in the prior art itself, and not based on applicant's disclosure. In Re San Su Lee, 277 F.3d 1338 (CAFC 2002) (“[T]he evidence of record must identify an objective source of the motivation to combine A with B in the manner proposed.”) See also MPEP §§ 2141 – 2142.

Applicant submits that nothing in Montegue suggests the desirability of using dry plasma etchant to remove the sacrificial layers. On the contrary, by explicitly describing wet etching, as described above, Montegue teaches away from the use of dry plasma etchant.

As for Ikeda, nothing in Ikeda suggests the desirability of, or provides any motivation for, forming holes in a cap layer, introducing dry plasma etchant through the holes in the cap layer, and sealing such holes with a seal layer. As explained above, on the contrary Ikeda **teaches away** from such features.

As well known, a reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. In Ikeda, no holes are formed in the cap layer, and no dry plasma etchant is introduced through such holes in the cap layer. On the contrary, Ikeda teaches away from the limitations in claim 1 requiring the forming of holes in the cap layer, and introduction of dry plasma etchant through the holes in the cap layer, by teaching that a throughhole be formed **below, in the substrate**, and that the dry plasma etchant be introduced **from the bottom, through the hole in the substrate**. See e.g. FIG. 1(f) and 1(g) of Ikeda; see also Ikeda Col. 6, lines 46-48 and 56-60 (“**The through hole 190 is, . . . formed in the center of the bottom of the substrate 100 which extends vertically . . .**”; “The sacrificial layer 140 is removed, as shown in FIG. 1(g), isotropically in the dry etching by injecting gasses whose main component is oxygen excited by plasma **into the hole 190 . . .**”)

The Examiner has therefore failed to meet his burden of providing some suggestion of the desirability of combining Montegue and Ikeda.

A basic tenet of an obviousness rejection is that the references must be viewed without the benefit of impermissible hindsight. MPEP 2141. Applicant submits that the

Examiner used impermissible hindsight, in his 35 USC 103 rejection of claim 1 in view of Montegue and Ikeda, by failing to consider the invention as a whole, by failing to consider the references as a whole, and by using Applicant's disclosure as a roadmap.

For all of the reasons discussed above, Applicant respectfully submits that the Examiner has failed to establish a *prima facie* case of obviousness, and that there is no proper basis for the 35 U.S.C. §103 rejection of independent claim 1 which is not rendered obvious by Montegue and Ikeda, either alone or in combination.

Claims 3, 21, 22 and 26

It is well known that "[i]f an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious." MPEP 2143.03; In re Fine, 837 F.2d 1071, 2 USPQ2s 1596 (Fed. Cir. 1988).

Claims 3, 21, 22 and 26 all depend on claim 1, and therefore include all the limitations of claim 1. For all the reasons discussed in section 3 above, claim 1 is nonobvious under 35 U.S.C. 103. Accordingly, it follows that claims 3, 21, 22, and 26 (all depending from claim 1) are also nonobvious under 35 U.S.C. 103.

For these reasons, it is submitted that there is no proper basis for the Section 103 rejection of claims 3, 21, 22, and 26, and that claims 3, 21, 22, and 26 are allowable.

5. Allowable Subject Matter


Applicant notes with appreciation that claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form. Applicant has not rewritten claim 4 in independent form, in the belief that claim 1 is allowable as currently presented, for all the reasons discussed above.

8. Conclusion

On the basis of the foregoing amendments, Applicant respectfully submits that all of the pending claims are in condition for allowance. An early and favorable action is therefore earnestly solicited. If there are any questions regarding these amendments and remarks, the Examiner is encouraged to contact the undersigned at the telephone

number provided below.

Respectfully submitted,

A handwritten signature in cursive script that reads "Elizabeth E. Kim". The signature is written in dark ink and is positioned above a horizontal line.

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